

REMARKS

Applicants appreciate the thoroughness with which the Examiner has examined the above-identified application. Reconsideration is requested in view of the remarks below.

Claims 13 and 17 have been amended. No new matter has been added.

Claim objections

The Examiner has rejected claims 13-15 and 17-20 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicants have amended independent claim 13, and as such claims 14 and 15 dependent thereon, to clarify that each of the plurality of horizontal openings in the second ceramic greensheet connect two or more of the first plurality of vertical openings in the first ceramic greensheet to one another. Claim 17, which is dependent upon independent claim 16, has also been amended to reflect such claim limitations of now amended claim 13. Applicants point out that claims 18-20 depend from claim 16, not claim 17.

In view of the foregoing, Applicants submit that amended claims 13-15 and 17 overcome the rejections under 35 U.S.C. 112, second paragraph.

No new matter has been added.

Rejection under 35 USC § 103

The Examiner has rejected claims 1-20 under 35 U.S.C. 103(a) as being unpatentable over Briscoe et al. (U.S. Publication No. 20040043479). Applicants disagree.

Firstly, applicants would like to point out that Briscoe et al. U.S. Publication No. 20040043479 and Briscoe et al U.S. Patent No. 6,527,890, which applicants have overcome the rejections thereover, are related cases. In particular according to the USPTO's PAIR system, Briscoe et al. U.S. Publication No. 20040043479 is a Divisional application of 09/466,325 which is a continuation of US 6,642,046, which is a continuation of US 6,544,734 (Ser. No. 09/460,281), which is a continuation of US 6,527,890 (Ser. No. 09/460,283), which is a CIP of US 6,572,830 (Ser. No. 09/337,086), which is a CIP of US 6,592,696 (Ser. No. 09/235,081), and all of which claim priority to Provisional Application 60/103,701. Similarly, Burdon et al (WO/2000/0021659), which applicants also overcome the rejections thereover, is likewise a related case in that it claims priority to US Ser. No. 09/337,086 (now US 6,572,830), US Ser. No. 09/235,081 (now US 6,592,696) and to Provisional Application 60/103,701.

Independent claim 1 is directed to a ceramic micro well plate that includes a first ceramic greensheet having at least one vertical opening that is a reaction chamber of the micro well plate and a second ceramic greensheet under the first ceramic greensheet. The second ceramic greensheet has at least one vertical opening that is aligned with the vertical opening in the first ceramic greensheet. Contrary to the Examiner's interpretation, it is submitted that the term align, as is used in the present specification and drawings, is used in its conventional sense to mean components that are in proper coordination or in a straight line. (Def. align: to bring into line or alignment. align. (2009). In *Merriam-Webster Online Dictionary*. Retrieved July 27, 2009, from <http://www.merriam-webster.com/dictionary/align>.) An optical micro plug resides within and entirely fills the at least one vertical opening in the second ceramic greensheet, whereby the

optical micro plug allows viewing of the reaction chamber of the micro well plate by residing at a bottom thereof.

Independent claim 13 is also directed to a ceramic micro well plate that includes first, second and third ceramic greensheets. The first ceramic greensheet has a plurality of vertical openings, which are reaction chambers of the micro well plate. The second ceramic greensheet resides under the first ceramic greensheet and has a plurality of horizontal openings therein whereby each of horizontal openings connects two or more of the vertical openings in the first ceramic greensheet to one another. The third greensheet resides under the second ceramic greensheet and has a plurality of vertical openings aligned with the vertical openings in the first greensheet, whereby optical micro plugs reside within and entirely fill these vertical openings in the third greensheet to allow viewing of the vertical openings in the first greensheet, which again are reaction chamber of the micro well plate, by residing at a bottom thereof.

Independent claim 16 is directed to method of forming a ceramic micro well plate by forming a plurality of vertical openings in a first ceramic greensheet, whereby these vertical openings are reaction chambers of the micro well plate. A plurality of vertical openings are also formed in a second ceramic greensheet, whereby the second ceramic greensheet is provided under the first greensheet, and the vertical openings in the second ceramic greensheet are aligned with the vertical openings in the first greensheet. An optically effective material is then deposited to fill the vertical openings in the second greensheet to form a plurality of optical micro plugs therein that reside at the bottoms of the reaction chambers (i.e., at the bottom of or under the vertical openings in a first ceramic greensheet) to allow viewing of such reaction chambers of the micro well plate. Optionally, orizontal openings in a third greensheet may be

provided between the first and second greensheets to connect each of the plurality of horizontal openings to two or more of the plurality of vertical openings in the first greensheet to one another, while the optical micro plugs in the second greensheet remain in alignment with the vertical openings in the first greensheet to allow viewing of the reaction chambers (claim 17.)

It is submitted that Briscoe et al. U.S. Publication No. 20040043479 does not render obvious the present invention.

The Examiner states that Briscoe et al. U.S. Publication No. 20040043479 discloses a first ceramic greensheet (item 104), a vertical opening in the first ceramic greensheet that is a reaction chamber, a second ceramic greensheet (item 102) above the first ceramic greensheet, a vertical opening in the second ceramic greensheet that is aligned with the vertical opening in the first ceramic greensheet, and an optical micro plug residing within and entirely filling the vertical opening in the second ceramic greensheet (item 102) to allow viewing of the reaction chamber of the micro well plate by residing above such reaction chamber (Item 294; window). The Examiner acknowledges that Briscoe et al. does not disclose that the optical micro plug is positioned at the bottom of the reaction chamber, and takes the position that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify this plug to be an optical micro plug in the rearrangement as recited in the instant claims, because according to Briscoe et al, although the detector is conveniently provided as a thermal conductivity detector, the plug can be other types of detectors as well (See Briscoe et al [0374] & [0376]).

Applicants disagree with the Examiner's rejection. Again, as acknowledged by the Examiner, Briscoe et al. does not disclose, contemplate or suggest a first ceramic greensheet with

vertical openings therein that comprise reaction chambers of the micro well plate, and a second ceramic greensheet there under with vertical openings therein that are aligned with the vertical openings in the first ceramic greensheet, whereby optical micro plug reside within and entirely fill the vertical openings in the second ceramic greensheet to allow viewing of the reaction chamber of the micro well plate by residing at a bottom thereof. Rather, Briscoe et al discloses a vertical opening 156 in a first greensheet 102 with a second greensheet 104 under the first greensheet and having a horizontal opening or channel therein --not a vertical opening, as is claimed. That is, as shown in Fig. 3 and described in paragraph [0314] of Briscoe et al. channels 160, 162, 164, 170 are formed in layer 104, whereby the via 158 is connected to channel 160 and via 168 is connected to channel 170. Further, the Examiner likens applicants' optical micro plugs to item 294 in Fig. 3 of Briscoe et al., however, applicants point out that this window 294 is a channel that is formed in the first greensheet 102 over channel 170. (See, Briscoe et al paras. [0330] and [0331].) Also, the detector 2090 cited by the Examiner is not in alignment with the vertical openings in the first greensheet, but rather as is recited in paragraph [0374] of Briscoe et al the detector 2090 (i.e., a thermal conductivity detector) is provided in a layer under channel 2048 to detect the separated components as they travel along this exit channel 2048. Again, this detector 2090 does not reside within vertical openings in a second greensheet residing under a first greensheet whereby the detector 2090 is in alignment with vertical openings in the first greensheet to allow viewing thereof.

An essential feature of the invention is that the optical micro plugs of the present micro well plate reside in vertical openings within a greensheet thereof, and as such, are vertical optical micro plugs. These vertical optical micro plugs are in alignment with vertical openings in

another greensheet that represent the reaction chambers of the present micro well plate, such that, each optical micro plug is part of its corresponding micro well. These optical micro plugs may be lenses (claim 5, 15, 20), sensors (claim 7, 15, 20), conductive (claim 9, 15, 20), non-conductive (claim 10, 15, 20), a heater (claim 11, 15, 20), or even a cooler (claim 12, 15, 20).

Applicants submit that Briscoe et al. does not disclose, or even contemplate, a micro well plate having vertical openings in a greensheet layer, with vertical optical micro plugs in such opening, whereby these optical micro plugs are in vertical alignment with vertical opening reaction chambers of the plate, as is claimed. The Examiner has recognized the same. Again, applicants' claimed micro well plates have vertical optical micro plugs that are each part of their corresponding micro wells, thereby allowing viewing of these vertical opening reaction chambers. On the contrary, Briscoe et al. discloses horizontal columns connected in series by vertical vias to provide a spiral pattern column. (See Fig. 27.) This spiral pattern is the same spiral pattern as that shown in Fig. 2 of previously cited Briscoe et al U.S. Patent No. 6,527,890, the rejections over which have been previously overcome.

Again, the currently cited Briscoe et al. U.S. Publication No. 20040043479 does not disclose or suggest viewing vertical opening reaction chambers from vertical optical micro plugs. Briscoe et al. also does not disclose or suggest that vertical optical micro plugs that are part of their corresponding micro wells may be lenses, sensors, conductive, non-conductive, heaters or coolers, such that, these features are also integrated into the micro wells of the plate. As such, Briscoe et al. does not render obvious the instant invention due to limitations in the invention which are not disclosed nor contemplated in Briscoe et al. since Briscoe et al. does not teach or

suggest vertical optical micro plugs that are part of vertical micro wells for viewing the vertical reaction chambers thereof.

Again, the Examiner even recognizes that Briscoe et al does not disclose the plurality of vertical openings are filled with a plurality of micro plugs, nor that the optical micro plug is positioned at the bottom of the reaction chamber

Applicants continue to submit that the micro well plates of the present invention have technical advantages not present in the prior art micro wells. It is known in the art that when fluid is introduced into a micro well, a meniscus forms on the top end of the fluid column. This meniscus is undesirable since it causes light to be scattered or rebounded, which undesirably distorts the light or provides incorrect results. The present invention overcomes this problem associated with the meniscus at the fluid top by providing the present vertical optical micro plug at the bottom of a fluid column where there is no meniscus interference.

Applicants submit that the examiner has pointed to individual components of applicants claimed invention rather than taking applicants' claims as a whole. An invention "composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. " *KSR Int'l Co. v. Teleflex Inc.* 127 S.Ct. 1727, 1741, 82 USPQ2d 1385, (2007). The record must show that those of ordinary skill in the art would have had some "apparent reason to combine the known elements in the fashion claimed." *Id.* at 1741. Here the record contains no such finding. Rather, the Examiner has merely taken the position that it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify Briscoe et al to render the present invention.

Applicants also submit that approaches to obviousness determinations which focus merely on identifying and tabulating "missing elements" in hindsight retrospect "imbue one of ordinary skill in the art with knowledge of the invention in suit, when no prior art reference or references of record convey or suggest that knowledge," and, "fall victim to the insidious effect of hindsight syndrome where that which only the inventor taught is used against its teacher." *W.L. Gore & Assoc. v. Garlock*, 721 F.2d 1540, 1553 [220 USPQ 303] (Fed. Cir. 1983). "One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention." *In re Fine*, 837 F.2d at 1075, 5 U.S.P.Q.2d at 1600. For the reasons as discussed above, applicants submit that the record supports a conclusion of nonobviousness. It is submitted that any contrary conclusion would be based on hindsight.

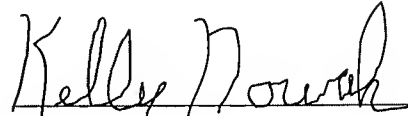
It is for these reasons that applicants submit that nothing in the record shows or indicates that a skilled artisan would have had a "reasonable expectation of success" in deriving the claimed invention in light of the teachings of the prior art. See, *In re Kubin* (Fed. Cir. April 3, 2009), citing, *In re O'Farrell*, 853 F.2d 894, 904 (Fed. Cir. 1988). As such, the claimed invention was not reasonably expected in light of the prior art, and therefore, was not "obvious to try." See *Ortho-McNeil Pharm., Inc. v. Mylan Labs., Inc.*, 520 F.3d 1358, 1364 (Fed. Cir. 2008). Therefore, the record supports a finding of non-obviousness.

Like that of the other patents and applications relating to Briscoe et al. U.S. Publication No. 20040043479 previously cited against the present application, it is submitted that Briscoe et al. U.S. Publication No. 20040043479 also does not render obvious the present invention.

It is respectfully submitted that the application has now been brought into a condition where allowance of the case is proper. Reconsideration and issuance of a Notice of Allowance

are respectfully solicited. Should the Examiner not find the claims to be allowable, Applicants' attorney respectfully requests that the Examiner call the undersigned to clarify any issue and/or to place the case in condition for allowance.

Respectfully submitted,



Kelly M. Nowak
Reg. No. 47,898

DeLIO & PETERSON, LLC
121 Whitney Avenue
New Haven, CT 06510-1241
(203) 787-0595